The Academy of Medical Sciences

Response to the Smith Review into future frameworks for international collaboration on research and innovation

May 2019

Summary

- International collaboration with partners around the world has been central to the UK's position as a global leader in research and innovation.
- Delivering the UK's target for R&D investment to reach 2.4% of GDP will benefit from increasing investment in international partnerships.
- The Academy welcomes the ambition of the International Research and Innovation Strategy to enhance these relationships across the globe.
- We believe that the EU will continue to represent a key partner for UK research, and efforts to promote global collaboration must be in *addition* to, rather than replacing well-established collaborations with EU partners.
- The EU Framework Programmes have been uniquely successful at supporting multilateral collaboration and the benefits to UK research from participation in them extend far beyond financial remuneration, for example providing access to infrastructure for the mobility of talent as well as providing influence over the development, regulation and adoption of emerging technologies.
- We therefore believe that the UK should seek the closest possible association to Horizon Europe.
- However, the Academy welcomes the important role of this Review in considering what could be established if association to Horizon Europe cannot be achieved. This Review should consider the mechanisms required to achieve comparable independence and long-term budgetary security, of at least 7 years, which underpin the success of the Framework Programmes.
- We believe that a domestic Horizon Europe alternative must:
    - Create a "Discovery Fund" that has the autonomy to fund basic research according to the excellence of the proposals alone.
    - Establish a management board drawn from UK and International researchers and innovators from Universities, the Academies, UKRI, Industry and BEIS.
    - Support the flow of talented researchers to the UK, as well as enabling UK researchers to benefit from studying and working abroad.
    - Recognise the value of the wide diversity of funders of research and innovation that the UK currently benefits from.
    - Invest across the research and innovation pipeline; ensuring any schemes established are navigable and approachable to those from all sectors is vital to attracting foreign direct investment to the UK.
    - Explore opportunities to minimise the bureaucratic and administrative burden that can be a feature of some EU funding schemes.
- The Academy will continue to engage proactively with Government and the Horizon Europe Alternatives Board to contribute to the design and oversight of domestic alternative schemes if we are unable to associate to Horizon Europe.

- Establishing a domestic alternative with a similar ambition, prestige and rigour will take time. Ensuring that UK research and innovation is not negatively affected during any possible transition will be vital.

Introduction

1. The Academy of Medical Sciences promotes advances in medical science, and works to ensure that these are translated into healthcare benefits for society. Our elected Fellowship includes the UK's foremost medical science experts drawn from academia and industry. This submission is informed by the expertise of our Fellowship and our contributions to the Horizon Europe Alternative Board on which we sit

Horizon Europe

2. Based on our Fellows' experience of previous EU Framework Programmes and the current Horizon 2020, the Academy of Medical Sciences strongly believes that UK research and innovation would be best supported by achieving the closest possible association to future EU Framework Programmes.

3. We have engaged closely with our sister Academies across Europe and have found that this desire for the UK's continued association is shared.[1] Through this network we have strong allies in advocating for favourable association terms for third countries, such as the UK, to Horizon Europe (HEU).

4. We support the position outlined in Government's International Research and Innovation Strategy that it is a "core objective" to continue to collaborate with European partners and that the UK should "explore association" to HEU.[2] We also note the Government's position that this should be subject to three conditions: the structure of the programme, UK's influence, and value for money of the UK's contribution.[3]

5. The Academy of Medical Sciences believes that the EU Framework Programmes have been uniquely successful at driving multilateral collaboration and that the UK's participation has been greatly beneficial for research and innovation in the UK and EU-27.

6. The financial benefits to the UK of the Framework Programmes are well-documented, however we believe that many of the benefits accrued by UK research have been non-monetary.[4,5] Many of these benefits could not be achieved on a national, or even a bilateral, scale.

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[1] https://www.feam.eu/wp-content/uploads/FEAM-position-on-Horizon-Europe_Final.pdf
[2] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/801513/International-research-innovation-strategy-single-page.pdf
[3] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/710268/SCIENCE_-_FINAL.pdf
[4] Technopolis (2017), The role of EU funding in UK research and innovation https://acmedsci.ac.uk/file-download/70343877
[5] Academy of Medical Sciences (2018) Non-monetary benefits of the EU Framework Programmes https://acmedsci.ac.uk/file-download/11769334

7. For example, the Marie Sklodwska-Curie Actions provide funding and infrastructure for the mobility of researchers, allowing them to study and work outside of their home country. Meanwhile, the European Reference Networks, which draw funding from H2020, support pan-European research into rare diseases where patient cohorts are too low in any single country to yield meaningful scientific advances.

8. Participation in the Framework Programmes can also afford the UK influence over the development, regulation and adoption of emerging technologies. For example, the Innovative Medicine's Initiative (IMI) "GetReal" project involves collaboration between academia, industry and regulators to incorporate new sources of data to speed up the development of new drugs.[6]

9. Importantly, the EU framework programmes provide an opportunity for UK-based researchers to work with, and measure themselves against, the best researchers across the continent. This benchmarking drives up international standards and ensures that Framework Programme funding awards are highly prestigious. The UK's great success in achieving these awards acts as a signal of the quality of research taking place in the UK to potential collaborators and investors and attracts talent to the UK.

10. Whilst we recognise certain challenges with administrative burden within Horizon 2020 and that the proposals for HEU have not been fully confirmed, we believe that many of the benefits outlined above would continue to be delivered by the UK seeking association to HEU.

Horizon Europe Alternatives

11. We understand the need for the UK Government to prepare contingency plans in the event that our primary goal of association to HEU cannot be achieved. We have supported this process through our membership of the Horizon Europe Alternatives Board and our contribution to the development of a series of principles for a domestic alternative to HEU.

Discovery Fund Element

12. We believe that any domestic alternative to the discovery element of the framework programmes should be underpinned by the principles jointly drafted by the Horizon Europe Alternative Board, including:

    - Support for curiosity-driven research, with excellence as the sole evaluation criteria
    - A governance structure that guarantees independence
    - Involvement of international and world leading researchers and innovators in its review panels and governance structures
    - Support for discipline-specific and inter/multi-disciplinary research
    - The ability to attract leading researchers to the UK (as well as retaining those already in the UK), including through close integration with the future

[6] https://www.imi-getreal.eu/

immigration system for awardees; their partners and dependants; and their teams.
- Provision of funding across all career stages
- Attractive terms of awards, including competitive scale and duration of awards as well as appropriate coverage of full economic costs and salaries.
- Support for access to high quality national and international research infrastructure
- Promotion of diversity and inclusion: actively taking steps to ensure equality, diversity and inclusion at all levels and career stages
- Complementarity to existing funding for curiosity-led research, from public and private non-profit sources.

13. In addition, it is vital that the discovery fund must be supportive of international mobility of researchers. A discovery fund should be supplemented by initiatives directly targeted at supporting the movement of excellent researchers, attracting talented individuals to the UK and facilitating UK nationals to benefit from studying and working overseas.

14. The Academy believes that the establishment of a domestic discovery fund must protect the diversity of sources that currently benefits the UK funding landscape.

15. Finally, the development of a domestic replacement programme should maximise the opportunity to reduce the bureaucracy and administrative burden associated with applying for and holding an award wherever possible.

Budgetary certainty

16. A key aspect of the success of the Framework Programmes has been the continuity of funding over a seven-year period of the EU's Multiannual Financial Framework. This has enabled long-term planning and has provided important stability to support research and innovation.

17. It is critical that any HEU alternative has guaranteed funding for a minimum of seven years and is subject to independent governance. Exposure to Government Spending Review cycles of five years or less cannot deliver this long-term stability.

18. **We urge this review to explore mechanisms that could achieve this security and independence, including whether a statutory instrument would be required. Only long term financial security and independent governance will genuinely match the benefits of the EU Framework Programmes**.

Governance and shaping

19. The Academy of Medical Sciences believes that, in order to achieve credibility in the UK and beyond, a domestic alternative to HEU should include a high-level management board of relevant stakeholders with representation including, but not limited to, outstanding UK and International researchers and innovators from Universities, the Academies, UKRI, Industry and BEIS.

20. Through representation on this board, the Academy would support the co-design, governance and peer-review structures required for a potential domestic alternative.

Timescale and attractiveness

21. Any domestic alternative to HEU must be balanced against its relative attractiveness to potential collaborators and the ability to deliver it within the required timeframe.

22. HEU is due to commence in January 2021 and there is existing precedent for non-EU states to associate, as well as an ambition for this programme to be "open to the world".[7]

23. It must be acknowledged that potential collaborators may have to balance the relative attractiveness of a potential UK alternative to the pre-existing offer of HEU. Particularly as establishing the mechanisms required for a domestic alternative of a similar ambition, prestige and rigour will not be straightforward.

24. A lengthy delay in establishing a domestic alternative would cause a damaging hiatus to our existing collaborations and would be bad for UK research.

Future International Frameworks

25. Science is an inherently international activity and more than half of the UK's research outputs are now the result of international collaboration.[8] This is to the benefit of the research endeavour; as demonstrated by the fact that international collaboration is associated with increased field-weighted citation impact for the UK and its partner countries.[9,10]

26. Therefore, the Academy welcomes the opportunity to respond to this review and consider our future international collaborations, building on the ambition laid out in the Government's International Research and Innovation Strategy.[11]

27. Between 2011 and 2015, the US was the single country that the UK collaborated with most frequently (as measured by number of co-authored articles).[12] Germany, France, Italy, China and Australia followed.

28. Furthermore, in this period the UK produced over 90,000 articles with Newton Fund partners (compared to 110,000 with the US).[13]

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[7] https://ec.europa.eu/commission/sites/beta-political/files/budget-may2018-horizon-europe-regulation_en.pdf
[8] https://www.elsevier.com/__data/assets/pdf_file/0018/507321/ELS-BEIS-Web.pdf
[9] https://www.elsevier.com/__data/assets/pdf_file/0018/507321/ELS-BEIS-Web.pdf
[10] Technopolis (2017) The Impact of Collaboration: The Value of EU Medical Research to Science and Health https://acmedsci.ac.uk/file-download/32381033
[11] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/801513/International-research-innovation-strategy-single-page.pdf
[12] https://www.elsevier.com/__data/assets/pdf_file/0018/507321/ELS-BEIS-Web.pdf
[13] Newton fund partners are all on the OECD DAC (the Development Assistant Committee of the OECD) and include Brazil, Chile, China, Colombia, Egypt, India, Indonesia, Jordan, Kenya, Malaysia, Mexico, Peru, Philippines, South Africa, Thailand, Turkey and Vietnam https://www.newtonfund.ac.uk/about/

29. It is also interesting to note that the field-weighted citation of impact of UK collaborations with Germany, France and Italy (our top three European collaborators), as well as Newton Fund partners such as Kenya, Brazil and Mexico, was at least as high as that with the US.[14]

30. Together, this impressive set of statistics demonstrates that the UK has a huge variety of frequent and productive collaborations with research partners across the globe.

31. Our future approach to international research must build on these collaborations, taking opportunities to strengthen our collaborative partnerships with both established and emerging research nations from across the globe.

32. This should include creating mechanisms to co-fund large scale research programmes at a bilateral and multilateral level to tackle major health and research challenges. Adopting this approach would enable the UK to maximise our existing strengths and act as a global leader in responding to the future's greatest challenges.

33. However, we must ensure that efforts to boost collaborations with global partners operate *in addition* to maintaining our productive relationships with European partners and not at their expense.

34. Europe is our nearest neighbour and a global force in research in its own right. Coupled with our closely aligned regulatory landscape for research (for example, the use of animals in research and the conduct of clinical trials), Europe remains a key collaborator. Any future international strategy must recognise this and ensure that this historically close and productive relationship continues to flourish.

35. In this context, we support the ambition in the IRIS to "pursue a far-reaching relationship with the EU, and with individual member states, on science, research and innovation".[15]

Attracting private investment

36. Achieving the Government's target to invest 2.4% of GDP in R&D by 2027 will require a significant increase in private R&D investment. This will require a suite of Government measures, including a competitive R&D tax regime, skills policy and Government procurement extending far beyond the remit of this review. However, it is important to reiterate that the UK's ability to attract private investment into R&D must be underpinned by a strong academic research base.

37. Alongside support for the Discovery Fund, any future international framework should enhance the ability of the UK to attract foreign direct investment (FDI) by

[14] https://www.elsevier.com/__data/assets/pdf_file/0018/507321/ELS-BEIS-Web.pdf
[15] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/801513/International-research-innovation-strategy-single-page.pdf

investing across the research and innovation pipeline, including through offering targeted support for high potential, R&D intensive SMEs.

38. The UK has one of the best environments for starting new knowledge-based businesses. A thriving environment for the growth of research-intensive and innovative new firms is a key attractor for FDI and for large firms to locate their own R&D centres in the UK.

39. It is therefore important, not least because of the creation of the European Innovation Council, that the UK must not lose this advantage. It is vital the UK continues to make the most of its strong research base, financial environment and proportionate approach to regulation for small businesses.

40. Participation in these and future initiatives must be navigable to researchers and innovators from all sectors and to businesses of all size, with minimal administrative burden.

41. As outlined above, the ability to attract FDI is influenced by the health of the overall ecosystem. What is good for publically funded research is often good for driving more privately funded research. This is demonstrated aptly by the Public-Private Partnerships (PPP) supported by the Framework Programmes.

42. The IMI is the world's largest life sciences PPP and offers value to both academic and industry partners. IMI allows for public-private interaction on a neutral platform that includes funders, regulators, pharmaceuticals companies, academic centres, patient groups and SMEs to come together to target health issues that are too large to be tackled in isolation.

43. The shared funding arrangement of the PPP benefits industry partners through spreading the risk of addressing challenging problems amongst a larger number of partners. This incentivises investment in disciplines areas that might otherwise be neglected due to the balance of risk versus reward in conducting research.

44. Whilst we are aware of legitimate concerns about the bureaucracy associated with the IMI, we believe that the benefits of the partnerships like IMI can only be achieved on an international scale.

45. At time of writing it is not known which partnerships will be supported under HEU. **However, the Academy encourages the Government to explore the possibility of continuing the UK's relationship with future PPPs as a third country if full-association cannot be achieved.**